

BOROUGH



OF KENDAL

ANNUAL REPORT

OF THE

MEDICAL-OFFICER-OF-HEALTH,

FOR THE

YEAR ENDING DECEMBER 31, 1896.

BY

ROBERT MUSGRAVE CRAVEN, D.P.H., CAMB.,

MEDICAL-OFFICER-OF-HEALTH FOR THE WESTMORLAND COMBINED
COUNTY DISTRICTS.

KENDAL :

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BOROUGH OF KENDAL.—1896.

Table of Death-rates from All Causes, from Phthisis and Infectious Diseases, since the passing of the Registration Act, 1837.
This Tabulation was begun by the late Dr. David Page.

Year	Estimated Population June 30th	Deaths from			Annual Rate of Mortality per 1000 from				Percentage to total Deaths of Deaths from		Deaths from									Meteorology	
		All Causes	Phthisis (Consumption)	Seven principal Zymotic Diseases	All Causes	Corrected for Age and Sex distribution	Phthisis	Seven principal Zymotic Diseases	Phthisis	Seven principal Zymotic Diseases	Smallpox	Measles	Scarlet Fever	Diphtheria and Membranous Croup	Whooping Cough	Typhus Fever	Typhoid Fever or Enteric Fever	Other Fevers	Diarrhoea and Dysentery	Mean Temperature of the Air	Rainfall in Inches
1838	11800	339	68	54	28.7	..	5.8	4.0	20.0	15.9	35	..	97	..	7	3	..	11	1	44.81	45.739
1839	11800	414	51	149	35.1	..	4.3	12.6	12.3	36.0	19	..	..	..	8	13	..	20	2	46.09	57.965
1840	11800	343	56	83	29.1	..	4.7	7.0	16.3	24.2	7	34	16	..	..	..	..	11	2	46.03	48.227
1838-40		365.3	58.3	95.3	31		4.9	7.9	16.2	25.4	20.3	11.3	37.6	..	5	5.3	..	14	1.7	45.643	50.644
1841	11800	264	48	22	22.4		4.1	1.9	18.1	8.3	..	..	4	..	14	2	..	1	1	46.17	53.854
1842	11800	268	47	34	22.8	..	4.0	2.9	17.5	12.7	..	..	5	..	..	17	..	12	..	47.01	48.072
1843	11800	286	64	26	24.2	..	5.4	2.2	22.0	9	..	5	..	..	..	12	..	4	5	46.86	56.307
1844	11800	303	37	35	26.2	..	3.0	2.3	12.0	11.3	..	22	..	..	..	7	..	2	4	45.58	43.012
1845	11800	336	52	53	28.5	..	4.4	4.5	15.5	15.7	37	..	3	..	..	6	..	4	4	45.47	53.346
1841-45		292.6	49.6	34	24.8		4.2	2.9	17.0	11.4	7.4	5.4	2.4	..	2.8	8.8	..	4.6	2.6	46.218	50.918
1846	11800	427	56	99	36.2		4.7	8.4	13.1	23.2	7	3	23	..	1	40	..	14	11	48.44	52.365
1847	11800	370	57	73	31.4	..	4.8	6.2	15.4	19.7	..	..	47	..	..	16	..	5	5	46.67	52.197
1848	11800	340	53	26	28.8	..	4.5	2.4	15.5	8.2	..	9	1	..	..	10	..	2	4	46.32	56.314
1849	11800	276	33	30	23.4	..	2.8	2.5	11.9	10.8	..	2	..	..	2	13	..	8	7	46.62	48.068
1850	11800	239	25	16	20.2	..	2.1	1.3	10.4	6.7	..	..	..	..	5	6	..	3	2	46.64	49.576
1846-50		330.4	44.8	69.2	28		3.8	4.2	13.2	13.7	1.4	2.8	14.2	..	1.6	17	..	6.4	5.8	46.938	51.704
1851	11800	310	42	57	26.2		3.5	4.8	13.5	18.3	..	6	35	..	..	5	..	4	7	46.35	47.561
1852	11800	283	27	62	23.8	..	2.2	5.2	9.5	21.9	..	..	44	..	..	9	..	2	6	47.55	65.354
1853	11800	250	38	30	21	..	3.2	2.5	15.2	12.0	1	..	5	..	12	5	..	2	5	45.56	39.455
1854	12150	243	37	20	20	..	3.1	1.7	11.1	8.2	9	..	3	..	1	1	..	3	3	46.68	46.133
1855	12000	259	29	52	21.6	..	2.4	4.3	11.2	20.1	1	34	3	..	..	11	..	1	2	45.98	34.54
1851-55		260	34.6	44.2	22.5		2.9	3.7	12.1	16.1	2.4	8	18	..	2.6	6.2	..	2.4	1.4	46.43	50.918
1856	12000	235	36	17	16.2	..	2.4	3.7	12.1	16.1	..	..	..	..	2.6	6.2	..	2.4	1.4	46.43	50.918

1856-60		251.2	35.2	25.6	20.8		2.3	2.1	14	9.5	1.6	7.4	2		4.2	6.6	1	1.8	1	48.079	44.701
1861	12070	239	22	17	19.8		1.8	1.4	9.2	7.1		6	46	1	2	1	1	2	4	47.82	60.697
1862	12200	325	35	63	26.6		2.9	5.2	10.8	19.4		3	9	1	7	3	1	1	2	47.70	54.407
1863	12350	257	30	23	20.8		2.3	1.9	11.7	8.9					6	4		2	2	48.357	54.919
1864	12500	255	40	10	20.4		3.2	.8	15.7	3.9	1	1		2	1				5	46.865	47.571
1865	12600	307	36	33	24.3		2.8	2.6	11.7	10.7		6	1		1	7		5	13	48.294	42.669
1861-65		276.6	32.6	29.2	22.4		2.6	2.4	11.8	10	2	3.2	11.2	8	3.4	3	8	2	5.2	47.807	52.052
1866	12900	269	38	28	21		3.0	2.2	14.1	10.4		4			8	5	3	3	5	48.125	60.393
1867	12900	322	29	74	25		2.2	5.7	9	23		18	47		1	3	1	1	3	47.277	47.305
1868	13100	261	36	34	19.9		2.9	2.6	13.8	13		4	15			1			11	49.077	52.745
1869	13200	277	37	11	20.9		2.8	.8	13.3	4		1	3		1		1	2	3	47.508	55.498
1870	13400	337	49	47	25.2		3.7	3.5	14.5	13.9		20	1		12		2	1	10	48.32	43.09
1866-70		293.2	37.8	38.8	22.4		2.9	2.9	12.9	12.8		9.4	13.2	4	4.4	1.8	1.8	1.4	6.4	48.061	51.806
1871	13453	263	37	13	19.5		2.7	.9	14.1	4.9					5		2	2	4	47.81	50.245
1872	13477	260	24	27	19.2		1.7	2.0	9.2	10.4					12		7	3	2	49.81	69.178
1873	13502	263	29	13	19.4		2.1	.9	10.6	4.9					3		2	1	5	48.322	49.365
1874	13527	302	22	42	22.3		1.6	3.1	7.3	13.9		17	6		6		5		2	47.98	55.105
1875	13551	272	32	15	20.0		2.3	1.1	11.7	5.5			1		7		1		4	48.645	46.22
1871-75		272	28.8	22.0	20.3		2.1	1.6	10.5	7.9	4	3.6	1.4	2	6.6		3.4	1.2	3.4	48.513	54.022
1876	13577	259	17	14	19.0		1.2	1.0	6.5	5.4	4		2				2		6	48.43	51.885
1877	13602	225	31	22	16.5		2.2	1.6	13.7	9.7		14	3		2				3	47.784	65.775
1878	13627	305	32	19	22.3		2.3	1.4	10.4	6.3					7		5		7	47.84	43.758
1879	13652	253	41	5	18.5		3.0	.3	16.2	2			1		1				2	44.41	43.18
1880	13677	333	44	91	24.3		3.2	6.6	10.2	27.3		20	56		5		7		2	48.188	45.06
1876-80		275	33	30.2	20.1		2.3	2.1	11.4	10.1	8	7	12.4	2	3		2.8		4	47.33	49.931
1881	13702	255	29	15	18.6		2.1	1.0	11.7	5.8	1	1	6	3			3		1	45.524	59.77
1882	13779	265	34	17	19.2		2.5	1.2	12.8	6.4		1	5	2	1		5		3	47.448	59.82
1883	13848	253	42	16	18.2		3.0	1.1	16.6	6.3		4		2	2		2		8	47.187	51.51
1884	13922	272	43	42	19.6		3.0	3.0	15.8	15.4		9			11		19		13	48.238	44.47
1885	13996	256	36	17	18.2		2.5	1.2	14	6.6		2		1					3	45.36	45.83
1881-85		260	36.8	21.4	18.7		2.6	1.5	14.2	8.1	2	3.4	2.2	1.4	2.8		5.8		5.6	46.751	52.28
1886	14071	228	37	10	16.2		2.6	.7	16.2	4.6			2		3		1		4	46.444	53.98
1887	14145	260	38	11	18.3		2.6	.7	14.6	4.6				3	2		1		5	46.712	32.37
1888	14221	243	19	18	17.0		1.3	1.2	7.8	7.4	1	3	2	8			4			45.964	43.04
1889	14296	313	25	31	21.1		1.7	2.2	7.9	9.9		19		2	1		3		6	46.020	43.15
1890	14373	253	21	15	17.6		1.4	1.0	8.3	5.9				3	2		4		6	45.396	48.13
1886-90		259	28	17	18.0		1.9	1.1	10.9	6.4	2	4.4	8	3.2	1.6		2.6		4.2	46.105	44.134
1891	14449	282	25	14	19.5	19.8	1.7	.9	8.8	4.8		2					2	2	8	47.5	53.17
1892	14526	284	26	28	19.5	19.8	1.8	1.9	9.1	9.8		20		1	4			1	3	45.88	55.75
1893	14603	233	15	31	15.9	16.1	1.0	2.1	6.4	13.3		2	4	2	3		5		15	50.184	45.79
1894	14680	233	19	23	15.9	16.1	1.2	1.5	7.7	9.8			5	1	1		2		14	47.375	54.11
1895	14759	269	12	43	18.2	18.5	.8	2.9	4.4	15.9		23			7		1		12	46.846	47.92
1891-95		260	19	27	17.8	18.0	1.3	1.8	7.2	10.7		9.4	1.8	8	3		2	6	10.4	47.557	51.34
1896	14837	208	20	11	14.01	14.23	1.34	.74	9.6	5.2			1	1	2		2		5	48.532	48.09



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NOTES TO ACCOMPANY THE BOROUGH MORTALITY TABLE.

*From all Causes, Phthisis, and Infectious Diseases, since the passing of the
Registration Act, 1837.*

SMALL-POX.

1.—*Epidemic* in 1838-9. The death of a child aged 5 years occurred on the 19th January, in Stricklandgate ; but the outbreak would appear to have commenced in October, when the death of an infant, six months old, was recorded on the 7th of that month in Allhallows Lane, and to have continued until March, 1839, the last death being on March 10th, of a man aged 40, residing in Branthwaite Brow. Of the 54 deaths 16 were under 1 year, 18 between 1 and 5 years, 17 between 5 and 20 years, 3 above 20 years.

2.—*Epidemic* in 1845-46. A child aged 5 years died on February 3rd in Stricklandgate, and two other deaths occurred in March, but the chief fatality occurred in the months of November and December, and the last death on the 3rd June, 1846. Of the 44 deaths, 8 were under 1 year, 19 between 1 and 5 years, 7 between 5 and 20 years, 10 of 20 years and upwards.

3.—Small outbreak in 1888, commencing with importation of the disease from Lancashire and Yorkshire, where it was epidemic.

MEASLES.

Epidemic in 1840, 1844, 1855, 1859, 1867, 1870, 1874, 1877, 1880, 1884, 1888, 1889, 1892, and 1895. (The epidemic in 1884, though a very extensive one indeed, causing the closure of three schools, was of a mild type ; it ran its course during the period of the enteric-fever outbreak of the same year, and ceased in the month of May).

SCARLET-FEVER.

1.—*Epidemic* in 1839-42. It commenced in May, 1839, reached its height in the last week of October and the beginning of November, and subsided in February, 1840. Of the 113 deaths, 87 were below 5 years, 23 between 5 and 10 years, 3 between 10 and 20 years.

2.—*Epidemics* in 1846-47, 1851-52, 1862-63, 1867-68, and 1880. (The building of an infectious diseases hospital for the Borough was determined on after the epidemic of 1880, and was first used in September, 1882, when scarlet-fever patients were admitted).

3.—An outbreak in 1893, but of a mild type.

4.—An outbreak in 1894, again of a mild type. Commenced in the first week in July, attained its height in the week ending 13th October (twenty-two cases notified in that week), and gradually diminished, seven cases only being notified in the last fortnight in the year.

DIPHTHERIA.

The absence of any deaths certified from this disease before the year 1861 may be due to such deaths having been included under the common appellation of Croup.

1.—*Epidemic* in first two months of 1888, during and after a dense fog which hung over the town from January 8th to 20th.

WHOOPING-COUGH.

High mortalities in the years 1841, 1853, 1858-59, 1862-63, 1870, 1872, and 1885. (The prevalence of this disease in 1885 was during the last eight months of the year. The eleven deaths were all of infants under five years of age, as also were the three deaths in 1886, and the two deaths in 1887).

FEVER.

1.—This term includes all forms of continued fever. The death-rate was almost annually heavy up to 1860; since that date there has been a very perceptible decline—(Waterworks Company in 1849; Main Sewage Works completed by the end of 1873). As typhoid or enteric-fever was not distinguished from typhus-fever until 1840-41, and not generally in England before 1851, most of the deaths appearing under the column of typhus fever may be presumed to have been typhoid or enteric-fever. The first return of death from this latter disease was in 1856, and no return of typhus-fever has been made since 1868. The death rate under typhus-fever was annually constant from 1839 to 1863; and from 1868, since when no such return has been made, the mortality from enteric-fever has been continuous, except in the years 1877, 1879, 1885 and 1892.

The *constant prevalence* of fever was greatly accentuated in the years 1839-40, 1842-43, 1846-47, 1849, and 1858. The absence of mortality under record “other fevers” since 1873, tends to the belief that such returns formerly should have been made as of enteric-fever. The decrease of mortality from fever (including typhus, enteric and others) may be gathered from the following table :—

Period of years	1839-40	1841-45	1846-50	1851-55	1856-60	1861-65
Mortality	58	67	117	43	47	29
Period of years	1866-70	1871-75	1876-80	1881-85	1886-90	1891-95
Mortality	25	23	14	29	13	10

2.—From January to April, 1884, inclusive, there was a serious outbreak of enteric fever, affecting solely the north end of the town, due apparently to a curious combination of meteorological circumstances, with an inadequate ventilation of the main sewer in that district, and individual instances of faulty house-drain connections.

3.—A considerable outbreak in 1893, mainly between the middle of August and the middle of October, following a long period of exceptionally dry weather, during which the town was supplied with water from the river Mint, the amount supplied being also deficient.

DIARRHŒA.

An almost constant small annual mortality.

Exceptional. 1.—In 1846 during fatal epidemic of so-called “typhus-fever.”

2.—In 1865, 1868, 1870, and in 1884, during exceptional heat in July and August. In 1884 the exceptional heat continued into September, and was accompanied by mortality.

3.—No diarrhœa mortality in the year 1888, the first time in twenty-eight consecutive years.

4.—Diarrhœa was prevalent in August and September, 1893, hot weather with showers following a very long period of drought.

CHOLERA.

No registered return. The first epidemic in this country was during 1831-32, and therefore before the passing of the Registration Act.

BOROUGH OF KENDAL.

*Annual Report of the Medical-Officer-of-Health for the
year ending December 31st, 1896.*

Area	2,622 Acres
Population (census 1891)	14,430
Inhabited houses	2,952
Average population per house	4.88

ESTIMATE OF POPULATION.

I estimate the population on the 30th June, 1896 to be—

Males	7,069
Females	7,768
Total number of persons	14,837

BIRTHS	{ Males 210 }	persons 392
	{ Females 182 }	

Annual Rate of Births per 1000 of the population, 26.42.

DEATHS	{ Males 98 }	persons 208
	{ Females 110 }	

Annual Rate of Mortality} Males 13.86 }	persons 14.01
per 1,000 } Female 14.16 }	

But corrected for age and sex distribution, 14.23.

Excess of Registered Births over Deaths, 184.

Estimated increase of population, 78.

GENERAL MORTALITY IN 1896.

The total number of deaths registered in the year 1896 was 208. This is after deducting the deaths of non-residents who died within the Borough, and adding the deaths of those residents who died in other places. Estimating the population at 14,837, this is equal to a death-rate of 14.01 per 1000 of the population, or corrected for age and sex distribution, 14.23 per 1000.

ZYMOTIC MORTALITY.

The number of deaths from zymotic diseases, including diarrhœa, was 11, and this is equal to a death-rate of $\cdot 74$ per 1000 of the population.

MORTALITY FROM PHTHISIS.

The number of deaths due to Phthisis was 20, or equal to a rate of 1.34 per 1000.

ANALYSIS OF THE DEATH-RATE.

INFANT MORTALITY.

Of the total number of deaths, 38 or 18.2 per cent. were under one year.

The deaths of children under one year were at the rate of 96 per 1,000 births.

DEATHS OF INFANTS UNDER ONE YEAR, PER 1,000 BIRTHS.

1886-90	1891	1892	1893	1894	1895	1896
<u>134</u>	<u>144</u>	<u>120</u>	<u>130</u>	<u>129</u>	<u>165</u>	<u>96</u>

CHILD MORTALITY.

Fifty-seven deaths, or 27.4 per cent. of the total deaths, were of children under five years of age; being at the rate of 3.8 per 1,000 of the population.

PER-CENTAGES OF CHILDREN UNDER FIVE YEARS OF AGE TO TOTAL DEATHS.

1886-90	1891-95	1891	1892	1893	1894	1895	1896
<u>31.6</u>	<u>32.1</u>	<u>30.4</u>	<u>28.5</u>	<u>35.1</u>	<u>28.7</u>	<u>38.2</u>	<u>27.4</u>

DEATH-RATES UNDER FIVE YEARS PER 1,000 OF THE POPULATION.

1886-90	1891-95	1891	1892	1893	1894	1895	1896
<u>5.9</u>	<u>5.6</u>	<u>5.9</u>	<u>5.5</u>	<u>5.6</u>	<u>4.5</u>	<u>6.9</u>	<u>3.8</u>

DEATH-RATE UNDER FIVE YEARS PER 1,000 ESTIMATED TO BE LIVING AT THAT AGE-PERIOD.

1891-95	1892	1893	1894	1895	1896
<u>47.1</u>	<u>45.9</u>	<u>46.3</u>	<u>37.4</u>	<u>57.1</u>	<u>31.4</u>

The following table gives the number of deaths of children under one year and under five respectively :—

Year	No. of deaths under one year	No. of deaths between one and five years
1881-85	... mean 57·4	... 31·2
1886-90	... mean 56·8	... 27
1891	... 65	... 21
1892	... 50	... 31
1893	... 56	... 26
1894	... 50	... 17
1895	... 70	... 33
1896	... 38	... 19

ADULT MORTALITY.

The number of deaths between five and sixty-five years of age was 95, being at the rate of 6·4 per 1,000 of the total population, at the rate of 7·7 per 1,000 estimated to be living at that age-period, and constituting 45 per cent. of the deaths at all ages.

Death-rate per 1,000 of the population estimated to be living at that age-period :—

1893	1894	1895	1896
<hr/> 7·3	<hr/> 8·1	<hr/> 7·6	<hr/> 7·7

OLD-AGE MORTALITY.

The number of deaths of persons of sixty-five years of age and upwards was 56, being at the rate of 3·7 per 1,000 of the total population, 71·6 per 1,000 estimated to be living at that age-period, and constituting 26·9 per cent. of the deaths at all ages.

Death-rate per 1,000 of the population estimated to be living at that age-period.

1893	1894	1895	1896
<hr/> 82·4	<hr/> 89·4	<hr/> 93·8	<hr/> 71·6

TABLE I.

The following table gives the Recorded Annual Death Rates per 1000 from All Causes, and from several Zymotic Diseases during the year 1896.

	All Causes. (1)	Principal Zymotic Diseases. (2)	Small-Pox. (3)	Measles. (4)	Scarlet Fever. (5)	Diphtheria. (6)	Whooping Cough. (7)	Fever. (8)	Diarrhoea. (9)	Deaths under one year per 1000 Births. (10)
England and Wales...	17.1	2.18	0.02	0.56	0.18	0.29	0.41	0.17	0.55	148
33 Great Towns ...	18.9	2.86	...	0.71	0.22	0.38	0.57	0.19	0.79	167
67 other Large Towns ...	17.3	2.51	0.12	0.64	0.19	0.25	0.43	0.20	0.68	161
Rural England and Wales...	15.8	1.60	...	0.43	0.14	0.23	0.30	0.14	0.36	130
County of Westmorland ...	13.5	0.83	...	0.07	0.07	0.15	0.15	0.22	0.19	92
Borough of Kendal ...	14.0	0.74	...	...	0.06	0.06	0.13	0.13	0.33	96
Rural District of S. Westmorland...	12.3	0.95	...	0.15	...	0.10	0.25	0.20	0.25	71

TABLE II.

1896. Quarter ending	Births Regd.	Births per 1000 of population.	Percentage of Deaths under 1 year to		Percentage of Deaths between 1 and 5 years to		Percentage of Deaths under 5 years to	
			Total Deaths.	Births.	Total Deaths.	Births.	Total Deaths.	Births.
March 31	108	7·27	20·00	12·03	15·38	9·25	35·38	21·28
June 30... ..	100	6·73	13·72	7·00	7·84	4·00	21·56	11·00
September 30	96	6·47	26·00	13·54	...	...	26·00	13·54
December 31	88	5·93	11·90	5·68	11·9	5·68	23·80	11·36
Totals	392	26·4	...	...	...	...	...	...
Means ... ..	...	...	17·90	9·56	8·78	4·73	...	...

TABLE III.

Quarterly distribution of mortality at all age-periods, and from Lung and Zymotic diseases.

Quarter ending	Number of Deaths in each age period.						Total Deaths	Deaths per 1000	Percentage to total deaths of Deaths from	
	under 1 year	under 5 years	under 15 years	under 25 years	under 65 years	over 65 years			Lung Disease	Zymotic Disease
March 31	13	10	2	4	20	16	65	17·52	16·92	7·69
June 30	7	4	3	7	21	9	51	13·74	5·88	3·92
September 30... ..	13	...	3	...	19	15	50	13·47	2·00	2·00
December 31	5	5	2	4	10	16	42	11·34	23·80	4·76
Totals	38	19	10	15	70	56	208	...	..	...
Means ... ..	...	...	...	...	...	...	...	14·01	11·76	4·59

TABLE IV.

Quarterly distribution of deaths from Zymotic Disease.

Quarter	Seven Prin- cipal Zymotic Diseases.		Small- pox.		Measles		Scarlet Fever.		Whoop- ing Cough.		Enteric Fever.		Diphtheria and Membran- ous Croup.		Diarrhoea and Dysentery.		Total.
	-5	5+	-5	5÷	-5	5+	-5	5+	-5	5+	-5	5+	-5	5+	-5	5+	
March	3	2	...	...	...	...	...	...	2	..	...	...	...	...	1	2	5
June	1	2	...	...	...	...	...	1	...	...	...	1	...	...	1	...	3
September	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
December	1	1	...	...	...	...	...	...	...	...	...	1	1	...	...	...	2
Totals	6	5	...	...	...	...	...	1	2	...	...	2	1	...	3	2	11

TABLE V.

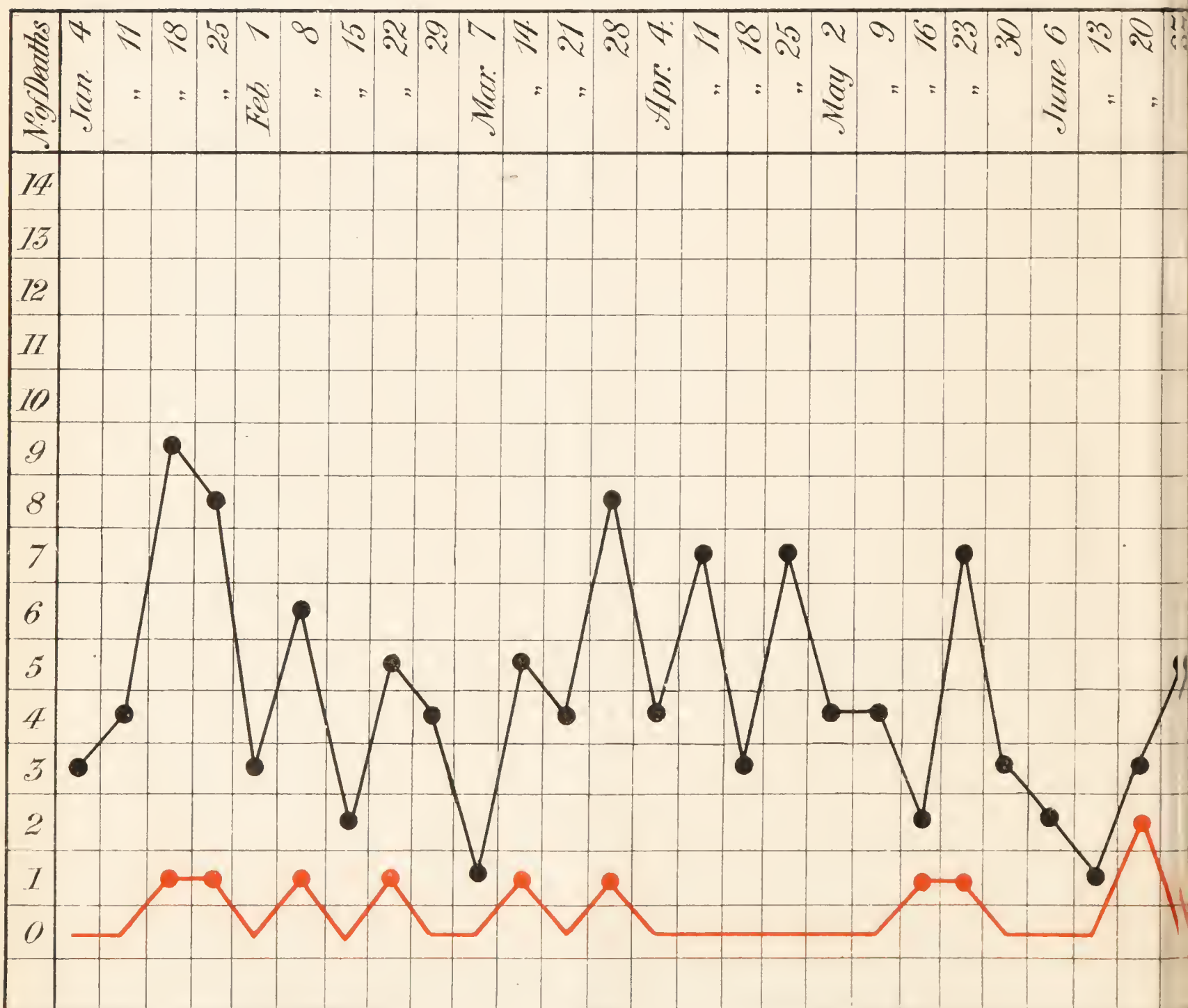
METEOROLOGY, with special Mortalities in parallel column. Observer—R. J. NELSON, Ivy Garth, Kendal.

1896.	BAROMETER.					THERMOMETER.					Prevailing Wind.	RAINFALL.				DEATHS FROM		
	Highest Reading.	Day of Month.	Lowest Reading.	Day of Month.	Mean Reading.	Highest Reading.	Day of Month.	Lowest Reading.	Day of Month.	Mean Reading.	No. of days on which 32° or less has been registered.	Total.	Maximum all registered by in 24 hourly period by 5 in. gauge.	Day of Month.	No. of days on which 1 or in. or more fell.	All Causes.	Phthisis and Lung Disease.	Zymotic Disease.
	inches		inches		inches	°F		°F		°F		inches	inches		inches			
January ..	30·700	9	29·100	15	30·051	57	27	22	23	39·290	13	4·20	1·12	24	17	27	9	2
February ..	30·400	3	29·350	20	30·037	61	23	21	24	41·000	10	3·34	1·42	8	16	18	3	1
March ..	30·000	10	28·400	4	29·493	70	12	26	10	43·290	7	6·98	·74	2	22	20	8	2
April ..	30·300	21	29·400	29	29·911	73	27	28	15	49·116	4	1·98	·40	11	13	21	3	..
May ..	30·300	25	29·700	22	30·090	78	11	30	21	53·951	3	·41	·19	20	3	19	5	2
June ..	30·100	21	29·400	8	29·785	80	14	38	22	61·400	..	3·19	1·25	4	13	11	1	1
July ..	30·150	17	29·450	26	29·842	80	13	44	27	61·968	..	4·28	·90	25	14	20	..	1
August ..	30·100	10	29·400	26	29·829	74	10	41	30	56·839	..	2·45	·82	23	15	13	2	..
September	30·200	30	28·600	25	29·441	70	4	38	22	54·300	..	6·43	1·13	22	23	17	2	..
October ..	30·200	14	28·900	8	29·479	59	14	23	27	42·968	10	4·46	·80	7	20	7	..	..
November	30·400	25	28·900	25	29·929	59	3	21	6	40·117	11	1·75	·57	7	8	16	5	1
December	30·000	20	28·600	6	29·513	49	26	21	1	38·145	12	8·62	1·80	26	23	19	7	1
Totals ..	..	..	..	..	..	..	..	..	..	..	70	48·09	..	..	187	208	45	11
Means ..	..	..	29·100	..	29·783	67·5	..	29·5	..	48·532	..	..	..	..	..	..	..	..

B O R O U G H *

1896 — DEATHS

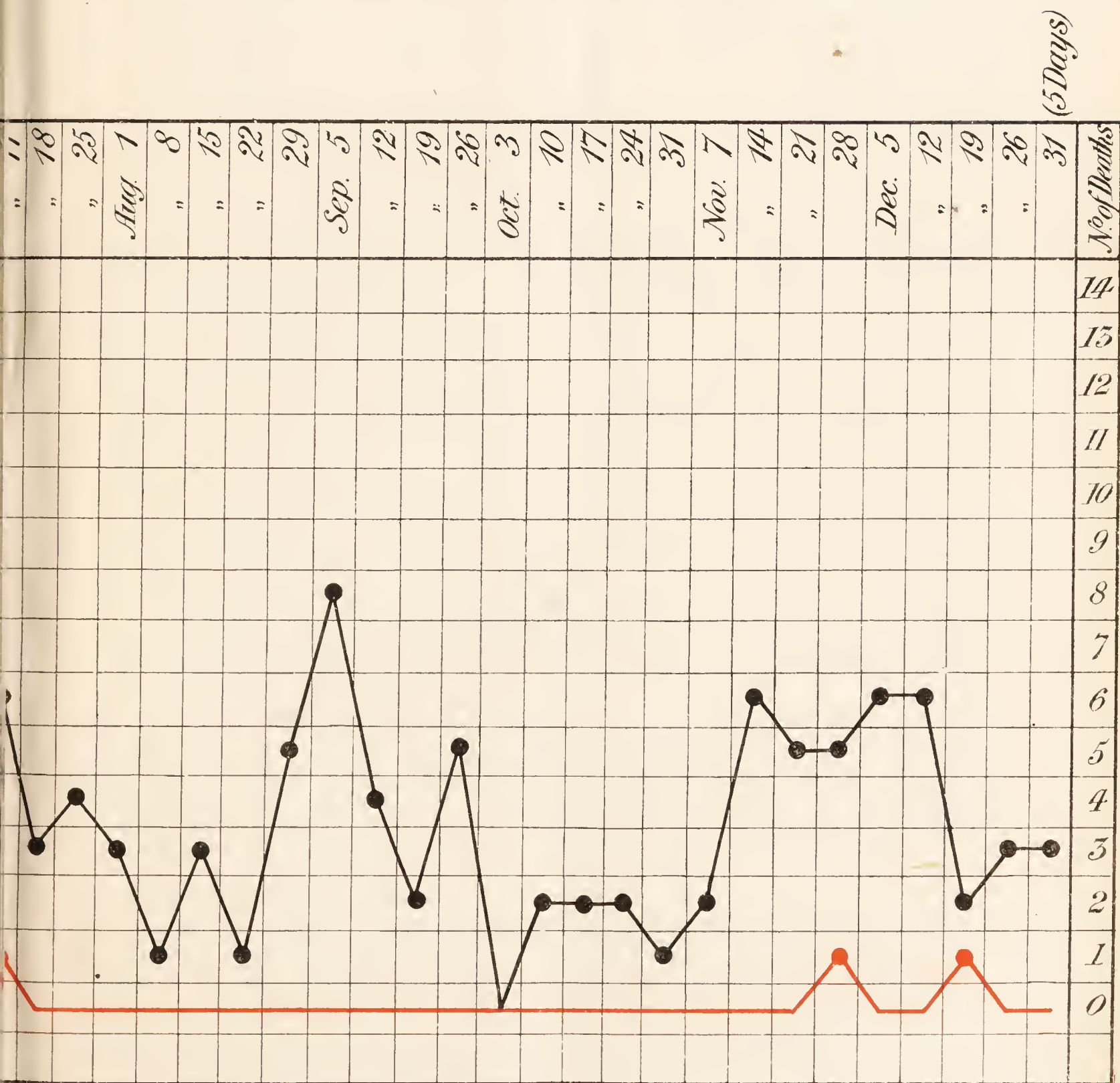
Black Ink indicates TOTAL DEATHS from all



K E N D A L

EACH · WEEK.

Red Ink indicates ZYMOTIC Deaths.



BIRTH-RATE.

The total number of births registered was 392 against 422 in the previous year, and the birth-rate was therefore 26·4 per thousand of the estimated population.

The births and birth-rates have been as follows : —

Year.		Births.		Birth-Rates.
1881-85	..	mean 455	...	32·8
1886-90	...	mean 422	...	29·6
1891-95	...	mean 420	...	28·7
1891	...	449	...	31·1
1892	...	415	...	28·5
1893	...	429	...	29·2
1894	...	387	...	26·3
1895	...	422	...	28·5
1896	...	392	...	26·4

GENERAL MORTALITY.

The total number of deaths from all causes, registered during the past year, has only been 208, being considerably lower than the lowest number of deaths registered in the Borough in any one year since the commencement of civil registration in 1837. By reference to the table following title page it will be seen that, taking the average number of deaths per annum in each period of five years, during the last half century, the number has risen as high as 330 in a population of only 12,000, and has never been lower than 251 with the same population, whilst during the three last quinquennial periods—the 15 years ending 1895—the average number of deaths per annum in each period, the population gradually increasing from 13,700 to 14,700, has been 260, 259, and again 260. All these figures compare with the phenomenal figure of 208 for the year 1896.

The three years of lowest mortality in the last half-century have been three out of the last four years, namely, 1893, 1894 and 1896. Vide column 1 in Table I. on page 11.

ZYMOTIC MORTALITY.—The number of deaths from zymotic disease has been 11. Only in six years out of the previous 58 years has the zymotic mortality been so low as this. No zymotic disease of any kind has been epidemic in the district during the past year. Vide columns 2 to 9 in Table I.

MORTALITY FROM PHTHISIS.—The number of deaths due to this disease—twenty—is the mean number per annum during the five years ending 1895, but considerably less than the mean number in any previous quinquennium. Prior to 1888 the annual number of deaths due to Phthisis was usually between 28 and 38. I trust that the comparative freedom from mortality from this disease during the last nine

years may long continue. I venture to suggest that it is in part due to the improved condition of the housing of the working classes—they will not continue to reside in closely confined houses with low ceilings, bad ventilation, and bad light if they can help it.

ANALYSIS OF THE DEATH-RATE.

INFANT MORTALITY.—Here we have the principal cause of the diminished death-rate of the Borough during the past year, the deaths of infants under one year being only 96 per 1,000 births registered. Considering the fact that Kendal is a somewhat densely populated urban district, such a low infant rate as this is exceedingly satisfactory. This age-period mortality varies as much as the zymotic mortality— young children being specially liable to contract infectious diseases ; may we hope that it is part due to increasing knowledge and care on the part of nursing mothers in the feeding and clothing of their offspring.

During the ten years ending 1890 the mean rate in England and Wales was 142, and in the County of Westmorland 100. Vide column 10 in Table I. on page 11.

CHILD MORTALITY.—The mortality under five years of age was also greatly below that of former years, being at the rate of 31·4 per 1,000 estimated to be living at that age-period, as against a mean rate of 47·1 per 1,000 per annum for the five years ending 1895. In the Rural District of South Westmorland, the corresponding rate of mortality was 23·8 per 1,000. During the past year and in the ten years ending 1890, the mean rate in England and Wales was 56·8, but in the County of Westmorland 34·6.

ADULT MORTALITY.—At this period of life the mortality was practically the same as last year, viz. : 7·7 per 1,000 of the population estimated to be living at that age-period.

OLD-AGE MORTALITY.—At this period of life there has been a saving also, the mortality per 1,000 estimated to be living of that age being only 71·6, the mean rate for the three previous years being 88·5.

Tables II. and III. on page 12 exhibit some of the remarkable vagaries of statistical facts, for which little explanation is forthcoming : in the first place, whilst in the September quarter there were no deaths of children between one and five years of age, there were no less than 13 under one year, but of these 13 only one was due to zymotic disease, though this is the quarter of all others in which we expect mortality from such diseases. Of the 13 deaths, no less than six took place within the first fortnight after birth, being attributable to immaturity, prematurity, malnutrition or the like. The most remarkable feature of all, however, is the exceptionally low death-rate for the December quarter ; in this quarter we usually expect between 70 and

90 deaths, which is equal to an annual rate of from 18·7 to 24·1 per 1,000 of the population, but during the December quarter now under review, there were only 42 deaths registered, which is equal to an annual rate of only 11·34 per 1,000 of the population. Had the usual mortality prevailed during the last quarter of the year, the death-rate of the past year would have been normal, and not the lowest on record. Possibly the meteorological conditions may have had some effect in reducing mortality; October was particularly cold, but dry; the month of November was one of the driest Novembers, if not the driest that has been known in the district, the rainfall being only 1·75 inches, whilst the mean temperature was 40·1 degrees Fahrenheit. The mean height of the barometer in November was no less than 29·9 inches—very high indeed for the month of November.

Table IV. on page 12, which gives quarterly distribution of mortality from zymotic diseases, shows the unusual immunity of the district from such diseases during the September quarter, and at the same time exhibits exceedingly low mortalities from scarlet-fever and diarrhoea, with no mortality whatever from measles during the year.

Table V. on page 13 is the meteorological return for the year. From the 1st of January to the last of November the total rainfall was under 40 inches, from which it then appeared probable that the rainfall of the year would be likely to fall short of the average by six or eight inches, or say 15 per cent. below the mean fall of the last half century, but the 23 wet days of December, with a fall of 8·62 inches, brought the total rainfall of the year up to 48·09 inches, which differs but little from the average.

Table VI. on page 14, which gives the deaths from diseases of the respiratory organs month by month, does not present any remarkable feature.

DIARRHŒA.—It is pleasing to observe that the mortality from this disease is decidedly less than last year, the total number of recorded deaths being only five, or equal to a diarrhoea death rate of only ·33 per 1,000. Of the five deaths three were under five years of age, viz., one month, 10 months and 17 months respectively, and the two last named were in such localities as we usually expect to find mortality from diarrhoea, viz., Stricklandgate and Low Fellside, where pure fresh air is a scarce commodity.

BIRTH-RATE.—As will be seen by the statement on page 15, the Birth-Rate is practically the same as in the year 1894, and that year was the lowest recorded rate in the Borough. It is 2·3 per 1,000 lower than the mean rate of the five years ending 1895, and much lower than the mean rates for the two previous quinquennia, which were 32·8 and 29·6 respectively.

INFECTIOUS DISEASES.

The total number of cases of infectious disease notified to me under the provisions of the Infectious Disease (Notification) Act, 1889, or discovered by me, not notified, was 45, as against 118 in 1895. Table VII. shows the number of known cases of each infectious disease in each quarter of the year, the number removed to the Sanatorium and to the Memorial Hospital, the number treated at their own homes, and the number of deaths.

TABLE VII.—SCARLET-FEVER.

Quarter.	Known Cases.		Admitted to Sanatorium.		Treated at Home.		Deaths.
March	...	1	...	1	...	0	0
June	...	4	...	3	...	1	1
September	...	1	...	1	...	0	0
December	...	2	...	2	...	0	0
Total		8		7		1	1

DIPHTHERIA AND MEMBRANOUS CROUP.

Quarter.	Known Cases.		Admitted to Sanatorium.		Admitted to Memorial Hospital.		Treated at Home.		Deaths.
March	...	0	...	0	...	0	...	0	0
June	...	0	...	0	...	0	...	0	0
September	...	0	...	0	...	0	...	0	0
December	...	6	...	3	...	0	...	3	1
Total		6		3		0		3	1

TYPHOID OR ENTERIC-FEVER.

Quarter.	Known Cases.		Admitted to Sanatorium.		Admitted to Memorial Hospital.		Treated at Home.		Deaths.
March	...	0	...	0	...	0	...	0	0
June	...	3	...	2	...	1	...	0	1
September	...	2	...	1	...	0	...	1	0
December	...	1	...	1	...	0	...	0	1
Total		6		4		1		1	2

ERYSIPELAS.

Quarter.	Known Cases.		Admitted to Sanatorium.		Admitted to Memorial Hospital.		Treated at Home.		Deaths.
March	...	4	...	0	...	0	...	4	0
June	...	6	...	0	...	0	...	6	0
September	...	6	...	0	...	0	...	6	1
December	...	7	...	0	...	0	...	7	0
Total		23		0		0		23	1

To these must be added one case of Continued Fever, and one of Puerperal Fever.

Table VIII. shows the number of known cases of infectious disease in each of the past six years, the Infectious Disease (Notification) Act, 1889, coming into operation in the Borough on the 10th of March, 1890.

TABLE VIII.

Year.	Smallpox	Scarlet Fever.	Diphtheria and Membranous Croup.	Enteric Fever.	Continued Fever.	Erysipelas.	Puerperal Fever.	Total.
1890	0	10	10	22	1	13	0	56
1891	0	41	5	39	1	23	2	111
1892	0	32	2	29	5	26	2	96
1893	2	186	3	51	4	36	2	284
1894	0	236	10	10	1	50	4	311
1895	0	71	5	11	1	28	2	118
1896	0	8	6	6	1	23	1	45

The whole of the known cases in 1890, except two, were subsequent to the adoption of the Notification Act.

SCARLET FEVER.

For several years past I have always given a diagram showing the known number of cases of scarlet fever, week by week ; but as the cases which have come to my knowledge during the last year are so few in number, I content myself by stating the months in which they were notified, viz., one in March, one in April, three in May, one in July, and two in December. All these except one were removed to the Sanatorium for treatment. The one that was treated at home was a young man 20 years of age, who lived in his father's house ; when I visited the place, the young fellow was sitting by the fireside ; his mother said he had not had Scarlet Fever, though he was desquamating at the time ; she refused to allow him to go to the Sanatorium—this was on the 15th of May—and he died of scarlatinal-nephritis on the 15th of June. I was not satisfied that in any known case the origin of the disease was traceable to the school attended by the patient, or any member of the family.

DIPHTHERIA.

The first case notified was in the month of October ; on examining the drains of the house in which the patient resided, two gully traps in the back yard were found defective, the downspout from a one-storey building adjoining the house was connected to the drain, thus carrying sewer air into the windows, and in the cellar was a slopstone with bell

trap also connected to the drain. Another case was in a yard in Highgate, where there is an open ashpit and privies for the use of the tenants of four houses, situate in a yard surrounded by two-storey buildings, and distant 33 feet from the house in which the patient lived. In another house, where there were two cases notified, the water-closet, which was outside the house, adjoined the wall of the scullery, and the closet trap was found to be cracked, permitting filth to soak into the ground immediately adjoining the building. In another case a gully trap in the yard was found defective.

ENTERIC FEVER.

The first case which came to my knowledge was a probationer in the Sanatorium, who took the disease whilst nursing a patient who had been brought in from the Rural District of South Westmorland for treatment. There was neither probability nor possibility that she could have contracted the disease elsewhere. The next case I have to note is that of a woman who was removed from Stricklandgate to the Memorial Hospital for treatment; it was never notified to me, and its existence was not known to me until the death of the patient was registered, the cause of death being certified by one of the Medical Staff of the Hospital. Whether or not an infringement of the Notification Act was committed, I am not prepared to say. If the Memorial Hospital is, to use the words of section 3 of the Act, "a hospital in which persons suffering from an infectious disease are received," then no offence was committed, and I accept it as such a hospital, believing that none of its Medical Staff would be guilty of a breach of the provisions of the Notification Act, in such case, but in so accepting it, I must urgently protest that it is being used for a purpose for which it is not intended, and that, in receiving within its walls cases of Enteric Fever, its managers are, quite needlessly, risking the lives of persons who go there for the purpose of being treated for non-infectious disease. To plead that cases of Enteric Fever are received into University College Hospital, or any other general hospital in London, is no argument, for we know perfectly well that it is a disease which may be, and has been conveyed from one person to another. The next case was introduced into the district, as a patient had been working at a house in the Rural District where several persons suffered from the disease. The next case was in Lound Street, in the month of July. This street consists entirely of really good working-mens' houses, but I regret to say that the midden-privy system is general in the street; some of the privies adjoining the houses. They ought to be entirely done away with, and converted into water-closets. I have no doubt that the next case which came under notice was contracted at the man's place of work, where, in a narrow yard was a cesspit into which a privy emptied itself. The last case was complicated with pre-existing chronic disease, which probably, in great measure, accounted for the symptoms from which she suffered.

WATER SUPPLY.

There has been a great improvement in the water supply of the town during the last eighteen months. The new works at Fisher Tarn are in progress, but are far from completion ; still, the detection of leaks in various places has immensely improved the pressure at which the Corporation are enabled to deliver it, and during the past year no complaint has been made to me of want of supply, such as I frequently received in former years. I am satisfied that when proper regulations for the prevention of waste and misuse of the water are vigorously put in force, there will not only be abundance of water for legitimate consumption, but there will be less water to be dealt with at the Sewage Farm.

ABATEMENT OF NUISANCES.

In this matter the Inspector of Nuisances and Borough Surveyor reports to me as follows : —

SYSTEMATIC INSPECTION.

Judging by the number of nuisances of various kinds which have come to light in other districts, after house-to-house inspection, even where the majority of the houses have been erected pursuant to bye-laws, I am satisfied that a house-to-house inspection of the Borough of Kendal ought to be made, and that a permanent record of the sanitary arrangements of each house thereby obtained, should be kept for future reference. If the Inspector spent one-half of his time, or say two hours daily on this work, and inspected four houses per hour, the complete inspection of the Borough would occupy about sixteen months. It would be time very well spent. The Inspector of Nuisances reports as follows :—

Ashpits and Privies foul and out of repair, or not roofed	...	115
Ashpits and Privies against house walls	... ..	3
Pigs kept so as to be a nuisance	... ..	2
Hens do. do.	... ..	2
Insufficient W.C. or Privy accommodation	... ..	4
Drains choked up or leaking	... ..	14
Accumulation of Manure	... ..	1
Slopstone pipe discharging on to the ground	... ..	2
Water Closets with insufficient water supply...	... ..	2
Houses declared unfit for habitation	... ..	4
Overcrowding	... ..	0
Canal Boats Inspected	... ..	8
Houses disinfected after infectious diseases	... ..	18
Articles disinfected in disinfecting stove	... ..	1468

Privies converted into hopper closets	...	...	...	38
Do. do. pail closets	...	...	...	1
Do. do. Duckett's waste-water closets	...	...	...	22
Houses unclean	...	...	...	1
Newly-erected houses supplied with water from Waterworks	...	...	...	24
Houses supplied with water from Waterworks in lieu of pump water...	...	...	...	2

The number of articles treated at the Disinfecting Stove includes a large number brought from the Rural District for disinfection.

NO. OF DRAINS TESTED WITH SMOKE TESTER.

Month.	Tested, laid, or relaid.		Places where Tested.
January	...	1	...40, Strickland Place
February	...	0	...
March	...	1	...46, Stramongate
April	...	3	...14, Lowther Street ; 2, yard 84, Kirk- and ; 21, Bank Terrace
May	2	...2, Far Cross Bank, East ; 9, Beech- wood
June	0	...
July	4	...1 & 2, yard 109, Highgate ; 4, Lound Street ; 2, yard 145, Highgate
August	...	1	...2, Aynam Road
September	...	0	...
October	...	2	...77, Stricklandgate ; 7, Parr Street
November	...	2	...14, Nether Street ; 7, Kirkbarrow
December	...	6	...14, Nether Street ; 2, Blind Beck Cottages ; 6, Aynam Road ; 4, yard 135, Highgate ; Sand Area Cottages ; 6a, Serpentine Road

SANATORIUM.

There were eight patients in residence on the night of the 31st December, 1895, thirty-nine were admitted during the year, and three remained under treatment on the 31st December, 1896. Of the thirty-nine cases admitted, twenty out of twenty-seven cases of Scarlet Fever were from other districts than the Borough of Kendal, and five out of nine cases of Enteric Fever were from the Rural District of South Westmorland.

The following Table shows the number of patients admitted in each month of the year, where they came from, and from what disease they suffered :—

Month.	Scarlet Fever.	Enteric Fever.	Diph- theria.	Number of patients admitted.	Number of patients' days.	Mean number of patients in residence.
Prior to January 1	7 { (1 B., 1 W.) (1 K.L.) (1 S.W.) }	1	...	8	126*	4'0
January ...	...	...	...	...
February ...	1 (S.W.)	2 (S.W.)	...	3	46	1'5
March ...	4 { (1 K.L.) (2 S.W.) }	2 { (1 S.W.) (1 Nurse) }	..	6	136	4'3
April ...	2 (1 S.W.)	1	...	3	244	8'1
May ..	5 { (1 L.) (2 S.W.) }	1 (S.W.)	...	6	252	8'1
June ...	2 (S.W.)	...	...	2	166	5'5
July ...	5 (4 S.W.)	...	...	6	233	7'5
August ...	4 (S.W.)	1	...	4	242	7'8
September ...	2 (S.W.)	...	...	2	231	7'7
October ...	...	...	..	...	158	5'0
November ...	...	...	2	2	74	2'4
December ...	2 ...	2 (1 S.W.)	1	5	90	2'9
Totals ...	27 (1 K.L.) (1 L.) (18 S.W.)	9 (5 S.W.)	3	47	1998	5'4

* Includes cases admitted prior to January 1st, 1896.

In previous reports I have been in the habit of inserting a table showing the number of loads of night soil removed from privy-middens, month by month. From the figures now given to me it appears that, although within the last few years there has been a great diminution in the number of privy-middens, due to the conversion of privies into water-closets, the number of cart loads of night soil, as distinguished from dry ashes, still increases. In future I shall omit the table.

MUSGRAVE CRAVEN, D.P.H., Camb.,

Medical Officer of Health.

Kendal, 16th February, 1897.

